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SOUTH AFRICA

Uranium Sold to UK, Says Report

51000014 Johannesburg THE CITIZEN in English 15 Mar 88 p 10

[Text] London—British Nuclear Fuels continued to import significant amounts of uranium from South Africa in a lucrative world-wide business not affected by the restrictions on trade imposed on Pretoria by the European Economic Community, the United States and the Commonwealth, the LONDON GUARDIAN reported yesterday.

The newspaper said details of traffic in uranium given to the European Parliament showed that nearly 1,000 tons of unprocessed uranium from South Africa passed through the West German port of Bremerhaven alone last year.

About 20 tons went to Britain, the newspaper added.

The GUARDIAN quoted BNF as saying that the uranium was probably processed for overseas customers in its plant at Springfields, near Preston.

The newspaper said EEC and commonwealth governments agreed in 1975 not to export nuclear to South Africa or collaborate in its nuclear development programme, but there were no restrictions on imports of its uranium.

The GUARDIAN said processing foreign uranium for overseas customers at the Springfields plant was worth R76 million a year.

"About half the uranium ore processed at the plant comes from South Africa or Namibia. The company declines to say who its customers are."

The GUARDIAN said officials at Euratom, the EEC safeguards agency, expressed concern recently that a world-wide system of uranium fuel swaps could undermine import bans imposed on South Africa by the US and the Soviet Union.—Sapa.

/09599

New Book Speculates on Country's Motives for Nuclear Capability

51000013 Johannesburg THE STAR in English 24 Mar 88 p 14

[Article by Garner Thomson. The first three paragrpahs are captions, pictures not included]

[Text] The air-to-air refuelling capability of the SAAF's remaining Buccaneer bombers gives them an extended flight range suitable for nuclear weapons delivery—a role for which they were originally designed.

South Africa's completely updated and refurbished Cheetah fighter bomber—a development of the French Mirage—also has long-range capability with the recent acquisition of aerial tankers by the SAAF.

Even the ageing Canberra bombers have the ability to deliver a nuclear attack efficiently.

London—South Africa's Canberras, Buccaneers and Mirage aircraft are "quite adequate" for a nuclear strike against a neighbouring black country, claims a book published in London.

But, it says, Pretoria may have initiated a nuclear arms programme to have a weapon of last resort only if Western support is withheld.

South Africa and Nuclear Proliferation, by JDL Moore (Macmillan Press) says Pretoria is not responding to possession of any nuclear weapons by any possible African adversary.

"This contrasts with past cases of nuclear weapons proliferation in South Asia or South America...South Africa's strategic situation in this case resembles more that of Israel.

Hostility

"Both states possess overwhelming conventional military superiority over hostile neighbours, but both are dependent on support from the West."

Moore—a research student at York's Centre for Southern African Studies—points out that South Africa has been able to continue her acquisition of sophisticated armaments in spite of the mandatory arms embargo imposed by the United Nations Security Council in 1977.

But "South Africa may be fearful that, with the likelihood that she will become increasingly the subject of sanctions on imports of technology and equipment, she may not be able to maintain indefinitely this qualitative superiority in armaments."

'Paranoia'

Moreover, he continues, South Africa retains "a paranoia" about the beleaguered situation of the white population at the southern tip of black Africa.

"She may thus have developed nuclear weapons for the same purpose as she has developed a seemingly unnecessary overwhelming conventional superiority: to convey the impression, both to her own people and the outside world that, in spite of the odds against her, the South African regime can survive indefinitely in a nuclear laager."

The author says this psychological use of nuclear weapons may lack military credibility, so South Africa "will probably continue to publicise her nuclear weapons

capability by such means as hints, ambiguous comments and anonymous tests, rather than make any open declaration of nuclear weapons possession, which would draw a hostile response from Western nations."

Distrustful

Moore believes South Africa would be prepared to admit openly to a nuclear weapons programme only when her military situation had deteriorated drastically and she had lost practically all hope of Western military support.

The book traces South Africa's nuclear research in the context of Pretoria's relations with the outside world, and predicts that Western policy regarding South African nuclear questions "is likely to remain characterised by secrecy, nervous and distrustful watchfulness, and a feeling of being powerless to do anything decisive."

/12913

Financing Announced for AECL Deal With South Korea
51200022 Ottawa THE OTTAWA CITIZEN in English 15 Mar 88 p B9

[Article: "EDC Funds Back AECL Korean Deal"]

[Text] The Export Development Corporation will provide financing of up to $16.5 million U.S. toward the sale of Atomic Energy of Canada Ltd. equipment and services to South Korea. Although the $22-million U.S. deal with the Korea Advanced Energy Research Institute for a 30 MW multi-purpose nuclear reactor was signed some time ago, EDC, which provides financing for foreign buyers of Canadian goods and services, announced the assistance Monday. Under the terms of the contract, AECL and KAERI will carry out joint research and development and detailed design associated with the new research reactor.

/12223

Two Pickering Reactors To Get New Pressure Tubes
51200021 Ottawa THE OTTAWA CITIZEN in English 17 Mar 88 p A13

[Article: "Reactor Repair Bill Hits $500M"]

[Text] Toronto (CP) - Ontario Hydro will spend $500 million to install new pressure tubes in two reactors at its Pickering nuclear-powered generating station, east of Toronto, it said Wednesday.

The utility, owned by the provincial government, said it had planned to perform maintenance work on the existing tubes in Pickering reactors three and four, and then begin retubing in the late 1990s.

But when recent tests revealed that at least one of the tubes in reactor three was deteriorating faster than expected, Hydro's board of directors decided to eliminate the maintenance work and start retubing next year.

The decision will cut the utility's costs in the long run, chairman Robert Franklin said in a written statement.

"Replacing the pressure tubes at this time will restore the reactors to almost new condition and...reduce future inspection, analysis and licensing costs," he said.

"Even if we had decided to go ahead with the two major maintenance programs... we would still have needed to retube or carry out further maintenance a few years later."

Hydro estimates it will take 23 months to replace the 390 tubes in reactor three. That work is to start in 1989.

Retubing of reactor four is to start in 1991 and is expected to take 19 months.

The pressure tubes enclose uranium fuel bundles that power the reactors, as well as heavy water used to moderate the nuclear reaction and keep the system under control.

Hydro says it has already spent about $450 million to replace tubes in the other two Pickering reactors, shut down in 1983 after some tubes were found leaking radioactive heavy water.

Despite the expense, Franklin said power from reactors three and four, over their expected 40-year service life, would cost $2 billion less than the same amount generated at a coal-fueled plant.

/12223

INTER-ASIAN

Accord With Indonesia on Nuclear Cooperation

51600027 Tokyo KYODO in English 0922 GMT 18 Mar 88

[Text] Tokyo, 18 March KYODO—Japan and Indonesia have agreed to promote cooperation on nuclear energy research, the Foreign Ministry said Friday.

The two countries exchanged diplomatic documents on the agreement in Jakarta on Wednesday, ministry officials said.

Under the agreement, the Japan Atomic Energy Research Institute and Indonesia's National Atomic Energy Agency will conduct research cooperation in the use and safety of Indonesian research reactors, production and application of radioisotopes and the management of the concomitant radioactive waste, the officials said.

/12913

HONG KONG

Link With PRC To Monitor Daya Bay Radiation Discussed

51400008 Hong Kong SOUTH CHINA MORNING POST in English 22 Mar 88 p 3

[Article by Jimmy Leung]

[Text] The Royal Observatory hopes to have devised a plan by the end of the year for an emergency radiation monitoring program for the Daya Bay nuclear power plant, its director said yesterday.

Mr Patrick Sham Pak said the Hongkong and Chinese governments were also negotiating to establish a direct link between Daya Bay and the territory in the event of an accident at the $28.8 billion plant.

Mr Sham said it was too early to say whether the link would be a telephone, a data or a communication link, although the question was being looked at by the Economic Services Branch.

Mr Sham said Hongkong and China should agree on how the direct link would work and what kind of information would be exchanged in the event of an accident.

"I believe something has to be done about an early warning system but I think it's too early to talk about details until we have received advice from the Government consultants—the Harwell-based United Kingdom Atomic Energy Authority (UKAEA)," he said.

He said the observatory's existing facilities and equipment were insufficient to cope with any contingency plans that required further measuring of the radiation level from the plant, which comes into operation in 1992.

In formulating an advance warning system of any nuclear accident, Mr Sham said two to three additional radiation monitoring stations might be set up in the northeast New Territories, which is closer to Daya Bay.

A string of detectors across Shataukok, Yuen Ng Fan on the Sai Kung Peninsula, King's Park and Tsim Bei Tsui on Deep Bay has already been planned to form the front line of the $2 million radiation monitoring program.

The observatory's existing radiation monitoring program will form the basis for monitoring possible fallout from the Daya Bay nuclear power plant. It will also test water and food products, particularly seafood, to establish a similar baseline.

Mr Sham said the observatory was studying new locations for monitoring stations to ensure they had an adequate electricity supply.

He said it was too early to say when these stations would be set up.

The British consultants, scheduled to release their report soon, have ruled out an evacuation plan for Hongkong's 5.6 million residents in the event of an accident.

They base their decision on worldwide radial distances for nuclear-accident evacuation of about 25 kilometres. Daya Bay is 50 kilometres from Hongkong.

Emergency measures suggested in the report include mobilizing about 16 Government departments such as the police, Fire Services, Water Supplies, Agriculture and Fisheries and Civil Aid Services if a nuclear accident occurred.

In another development, the observatory hopes to introduce regional weather forecast in the territory in two years following the establishment of more automatic weather stations.

An additional automatic station was set up in Tuen Mun in 1987-88. Others are being planned in Aberdeen and Tai Po in 1988-89 and in Sai Kung and Junk Bay in 1989-90 to complete the coverage on a district basis.

/9274

BRAZIL

Sarney Extols Cooperation With Argentina

PY090300 Brasilia Domestic Service in Portuguese 2200 GMT 8 Apr 88

[Report on "By the Radio" speech of President Jose Sarney on 8 April—passages within quotation marks recorded]

[Text] President Jose Sarney has reasserted that Brazil and Argentina will use nuclear energy only for peaceful purposes. In his weekly radio program By the Radio, President Sarney talked about the policy of Latin American integration, stressing the visit of the Argentine and the Uruguayan presidents to Brazil.

"We signed the Alvorada Declaration—so named because it was signed in the Alvorada Palace—which is the first tripartite declaration by the three presidents, setting up a common policy for Uruguay, Brazil, and Argentina. This commuique No 1 sets up a transportation policy, which will make possible transportation throughout the three countries free from bureaucratic or border barriers. This is the first step for the free circulation of goods throughout these countries, under common rules."

President Sarney also recalled the visit he made to the uranium enrichment and nuclear research plant of Pilcaniyeu in Argentina. He stressed the current cooperation in the nuclear area between the two countries. This cooperation has now increased with the inauguration of the Ipero plant in Sao Paulo with President Raul Alfonsin in attendance.

"Since we took office, we agreed through the Iguacu Act to establish cooperation in the nuclear area between the two countries. The purpose of this cooperation is to work together, to exchange technologies and information in a spirit of loyalty and friendship, so as to dispel all speculation about a nuclear race in Latin America. Brazil and Argentina then began a policy unprecedented in the world between two nations. This policy has yielded positive results, and today, any suspicion that this cooperation might be intended for any purpose other than the peaceful uses of nuclear energy is totally dispelled. Nuclear energy, both in Brazil and in Argentina, is at the service of peace through a system of mutual assistance for the benefit and well-being of our people."

President Sarney said the visit of President Raul Alfonsin to Brazil is significant for the future of the two nations.

"Yesterday, President Alfonsin said that if nothing is left in the wake of our stint in government, there will at least remain the gratitude of the present generations, our children, and grandchildren for having made the courageous and historic decision to grow together and to forever dispel any shadow of a nuclear race. And I added that this effort was not for the benefit of the people of Argentina and Brazil alone, but for all the peoples of our Continent."

Sarney further revealed that during the visit of the Argentine president, the first payment was made to the compensation fund that implements the common market.

"The Brazilian-Argentine common market, which was only a dream 3 years ago, is a reality now. It is operating, and we already have a list of 524 capital goods that are free of taxes and can circulate between Brazil and Argentina. Our continent should not remain behind and outside the economy of common markets, such as the European Common Market, the Comecom, and others.

We began to set up a common market, and now we will invite other countries of the continent to participate in it. This two-country common market is open to the other countries of the continent, so that together we can defend ourselves in an increasingly competitive world."

Finally, President Sarney said the two countries are working together in order to improve the standard of living of their populations, preparing them for the future.

"The Brazilian foreign policy that is Latin America-oriented has gone somewhat unnoticed by our people because it is not a matter of daily debate, a matter of daily concern. But this policy is extremely important because today's world is increasingly interdependent. No one can live isolated within a system of autarchy, and so Brazil is taking the basic steps for its modernization and its participation in the world, particularly in the Latin American world, where Brazil has a position it cannot ever relinquish."

Presidents Dedicate Plant

PY081556 Buenos Aires TELAM in Spanish 1318 GMT 8 Apr 88

[Text] Sao Paulo, 8 Apr (TELAM Special)—Argentine President Raul Alfonsin and Brazilian President Jose Sarney this morning dedicated the "Aramar" Atomic Experimental Center in Sao Paulo State.

The presidents also signed a document sanctioning their decision to intensify integration in the atomic field, thus guaranteeing the sector's autonomous and peaceful development.

Alfonsin and Sarney dedicated the "Aramar" plant where Brazil mastered the uranium enrichment cycle with national technology. The plant operates at the Navy's Admiral Alvaro Alberto Base. The nuclear project is considered part of the government's official development program.

After the dedication ceremony, the two presidents left for Sao Paulo in a Brazilian Air Force helicopter.

A farewell ceremony will be staged at Sao Paulo Cumbica Air Force Base at 1115 [1415 GMT] and President Alfonsin and his entourage will depart for Buenos Aires on an Argentine Air Force plane. He will arrive at Ezeiza International Airport at about 1345 [1645 GMT].

Joint Nuclear Policy Declaration With Argentina

PY102135 Sao Paulo FOLHA DE SAO PAULO in Portuguese 8 Apr 88 p A-8

["Text" of the Ipero Declaration on Nuclear Policy signed by President Jose Sarney and Argentine President Raul Alfonsin in Ipero, Sao Paulo State, Brazil, on 8 April]

[Text] The Government of the Federative Republic of Brazil and the Government of the Argentine Republic,

Taking into account the commitments assumed in the Joint Declarations of Foz do Iguacu and Brasilia, and Viedma [in Argentina], reiterate their firm conviction in the importance of nuclear energy for the economic and social development of their peoples, and reaffirm the inalienable right to develop, without restriction, their nuclear programs for peaceful ends, and declare:

1. Their satisfaction at the progress being made through the nuclear cooperation between the two countries, the bases of which were laid down in the Declaration of Foz do Iguacu, which created the Working Group on Nuclear Policy.

2. The importance of the identification by the working group of priority areas for the development of cooperation as stated in Protocol No 11 on immediate warning and reciprocal assistance in cases of nuclear accidents and radiation-related emergencies, and its annexes, and in Protocol No 17 on nuclear cooperation.

3. Their satisfaction with advances made in bilateral cooperation in the nuclear area, particularly in the areas of safeguard techniques, nuclear safety, and fast reactors, and with the exchange aimed at complementation of the nuclear sectors of the two countries, especially regarding reciprocal supply of equipment and materials.

And note:

1. The fact that bilateral cooperation in the nuclear field has introduced unprecedented forms of cooperation, making possible an increasing frequency of visits, contacts at the political and technical levels, and significant exchanges of information, thus contributing to the consolidation of mutual trust.

2. The total agreement of Brazilian-Argentine positions on the main international issues in the nuclear field.

3. Their will to extend cooperation to all Latin American countries that might be interested in participating in this cooperation.

And stress:

1. In the context of the unshakable commitment of both nations to use nuclear energy for peaceful purposes, the highly significant gesture of President Sarney's visit to the uranium enrichment plant of Pilcaniyeu.

2. In the same context, the fundamental importance of President Raul Alfonsin's visit to the Aramar Experimental Center in Ipero, when the two presidents inaugurated the uranium enrichment plant by bringing into operation the Admiral Alvaro Alberto Unit.

3. The complementary technical visits to the aforementioned plants on a reciprocal basis.

4. The fact that both installations are undeniable testimony to the capacity of the two peoples to develop high-level technology for peaceful ends by their own means.

And decide:

1. To improve existing mechanisms of political and technical cooperation by increasing the number of reciprocal visits and exchanges of information aimed at broadening the reciprocal acquaintance with the respective nuclear programs so as to optimize technological complementation and reciprocal trust.

2. To transform into a permanent committee the joint working group created under Item 4 of the Declaration of Foz do Iguacu, with the objective of undertaking and coordinating initiatives in the political, technical, and industrial areas of the nuclear sector. The permanent committee will meet at intervals of 120 days, alternately in Brazil and Argentina, to discuss all topics of mutual interest in the nuclear area. However, this committee could hold additional meetings at a level agreed upon by the two parties.

Ipero, 8 April 1988.

Alfonsin on Nuclear Safeguards

PY090358 Buenos Aires NOTICIAS ARGENTINAS in Spanish 2155 GMT 8 Apr 88

[Excerpts] Sao Paulo, 8 Apr (NA) — President Raul Alfonsin advocates "something like a new Tlatelolco Treaty," where "we can offer the necessary safeguards, and where we, ourselves, establish our goals for the peaceful use of nuclear energy," so as not to depend on guidelines set up by the world powers.

Alfonsin said that under the present circumstances, the Tlatelolco Treaty "is linked to the Nuclear Nonproliferation Treaty," which "appears to create a club of older

members (made up of the world powers) who can do as they please, and another club of latecomers, who cannot do anything," referring to the developing countries.

Alfonsin made these statements to "GAZETA MERCANTIL" of Sao Paulo. [passage omitted]

During his interview with GAZETA MERCANTIL, Alfonsin was asked if Argentina was prepared to ratify the Tlatelolco protocols. He said we face "a different problem" here.

"We are seeking a different path to advance in our scientific and technological development because the Tlatelolco Treaty invariably leads us to the Nonproliferation Treaty," Alfonsin said.

According to GAZETA MERCANTIL, Alfonsin said "there are a series of objections to this treaty because it appears to create a club of older members who can do as they please, and a club of latecomers, who cannot do anything."

Alfonsin stressed that the latter group is made up of a large number of developing nations.

"We want the dangers of a horizontal proliferation to be taken into account, but we beleive that vertical proliferation is much more serious and we are continuously struggling against it," Alfonsin stressed referring to the ever larger North-South breach.

Alfonsin said that this is one of the objectives of the Group of Six struggle against militarism. He said "we are willing to work for something like a new Tlatelolco Treaty where we can offer the necessary safeguards, and where we ourselves establish our goals for the peaceful use of nuclear energy."

Alfonsin said the "new Tlatelolco" would not be for the Group of Six, and added: "We could start working on it with Brazil because Argentina and Brazil are the two countries with the highest level of development in this area."

Alfonsin Ends Visit, Departs

PY081720 Rio de Janeiro Rede Globo Television in Portuguese 1600 GMT 8 Apr 88

[Text] President Jose Sarney and Argentine President Raul Alfonsin this morning dedicated the uranium plant in Ipero, Sao Paulo. They also signed the Ibero Declaration in which they reaffirmed their intention to use nuclear energy only for peaceful purposes.

Presidents Sarney and Alfonsin then went to Guarulhos International Airport, in Greater Sao Paulo, aboard a helicopter. President Alfonsin then departed for Buenos Aires, while President Sarney left for Sao Joaquim, Santa Catarina.

CNEA Chief on Alliance

PY082212 Buenos Aires DYN in Spanish 1148 GMT 8 Apr 88

[Text] Sao Paulo, 8 Apr (DYN)—CNEA President Emma Perez de Ferreira said today that the Argentine-Brazilian alliance for nuclear energy research "exists only in the minds of the members of the Nuclear Club," and she denied that they are cooperating to build an atomic submarine.

Ferreira said that except for a "symbolic" document that will be signed today by Argentine President Raul Alfonsin and Brazilian President Jose Sarney, "no new aspects in the field of nuclear energy will be agreed upon."

The CNEA president is in Sao Paulo as part of the delegation accompanying President Alfonsin on his 3-day visit to Brazil.

When asked about the progress attained by the two countries in the field of nuclear energy, she said: "We have recently made significant progress in finding points of agreement regarding high-risk waste treatment."

Ferreira also said that integration with Brazil creates conditions favorable to "selling nuclear technology" to the rest of the Third World countries. Nuclear plants in the two countries should start working to promote technology sales, she said. This is why she exhorted the officials to define a policy so that construction can begin on a fourth Argentine nuclear plant.

She said that Argentina "has already sold a nuclear plant to Peru," and "there is a possibility" that a similar plant will be purchased by Iran, although the CNEA "is waiting for the outcome of the Persian Gulf conflict" between Iran and Iraq to make the deal.

Regarding the project for building a "nuclear waste dump," she said: "The nuclear accident that took place in Brazil last year has delayed the investigation and development plans in this field." This incident demonstrated the need to make greater efforts to find a place to dump nuclear wastes.

She said that currently one of the most important aspects of the peaceful Argentine-Brazilian nuclear research task is to coordinate technologies of different levels of progress.

Ferreira said that "different technologies would have to be made compatible, but this does not mean we will carry out a joint program with existing nuclear plants. However, from now on we can work together in the fields of nuclear safety and protection from radioactivity, two fields in which the countries are at the same level."

Minister on Peaceful Program

PY090035 Brasilia Domestic Service in Portuguese 2200 GMT 8 Apr 88

[Text] Navy Minister Henrique Saboia, representing President Sarney, talked to journalists about the importance of this new stage reached by the Brazilian-Argentine nuclear program.

[Begin Saboia recording] It has great importance for our country because this is another stage of a program that had to overcome many difficulties in diverse technological areas. [end recording]

Minister Saboia also denied that this program has military objectives.

[Begin Saboia recording] We have to make it clear that the government has made a decision to use nuclear energy for peaceful ends. [end recording]

Navy Opens Nuclear Facility to Press

PY061406 Sao Paulo FOLHA DE SAO PAULO in Portuguese 5 Apr 88 p A-8

[By Ricardo Bonalume Neto]

[Excerpts] A project the Navy has kept secret for 10 years was shown to the press just 4 days before its dedication, which will be presided over by Brazilian President Jose Sarney and Argentine President Raul Alfonsin next Friday. On 4 April, physicist Rogerio Cezar de Cerqueira Leite, 56, who is a Campinas University professor emeritus and a member of the FOLHA editorial council, and two FOLHA reporters visited the Aramar experimental center facilities in Ipero (1,254 km west of Sao Paulo). At this center, the Navy, through its special project coordinating board [Coordenadoria para projetos especiais—Copesp], is developing two major projects with the cooperation of the Institute for Nuclear and Energy Research (Ipen). The projects include the complete mastery of the nuclear fuel cycle at the pilot plant level [em escala piloto] and the installation of a small-size (50 megawatt) research nuclear reactor.

The long-term objective of the projects is the construction of a nuclear submarine. Rear Admiral Othon Luiz Pinheiro da Silva, 49, who runs the center, said the reactor to be installed in Ipero "is an exercise with practical objectives," meaning that the reactor will have the appropriate size and power for a submarine. He explained that at Ipero, the Navy is developing "both the gasoline and the motor," that is, the enriched uranium and the reactor.

One of the reasons why the Navy decided to open the center to the press is to show that there is no risk of nuclear accident. According to Pinheiro da Silva, the uranium hexafluoride becomes solid under atmospheric pressure and at room temperature and, consequently, there can be no uranium hexafluoride leaks. "The great cause of fear is not the uranium but what remains of it after it is burned, and this does not happen here," Cerqueira Leite said, adding that "we toured the plant, sat near the uranium, and could not even realize that the centrifuge was operating."

The Navy has spent some $81 million in 8 years on the project. Only 5 percent of this amount was used to import equipment.

The expression "to develop one's own technology means to be independent" can be read on several plaques at the Aramar center and even on the caps worn by center officials, which include several Navy officers and marines, all of them dressed in civilian clothes.

Officials on Navy Nuclear Facilities, Program

PY081326 Sao Paulo FOLHA DE SAO PAULO in Portuguese 7 Apr 88 p A-8

[Text] Yesterday National Nuclear Energy Commission (CNEN) President Rex Nazareth, 50, said in Sao Paulo that the government will keep secret the quantity of processed enriched uranium and the production capacity of the Aramar experimental center, which is run by the Navy, in Ipero (125 west of Sao Paulo). President Jose Sarney and his Argentine counterpart, Raul Alfonsin, will visit the plant tomorrow. "We will not disclose the information that they did not disclose to us," Nazareth said, alluding to the visit Sarney paid to the Argentine nuclear facilities in Pilcaniyeu in 1987. Nazareth spoke during a news conference held at the Institute for Nuclear and Energy Research (IPEN), at the university campus (western Sao Paulo) yesterday afternoon. The uranium enrichment facilities were shown to the press on that occasion.

Nazareth refused to disclose the number of centrifuges, the machines that enrich uranium, operating in Ipero. IPEN Nuclear Material Department Director Alcidio Abrao, 63, said that the Navy plans to operate 400 centrifuges in Aramar. Abrao explained that there are some 12 tons of uranium hexafluoride in IPEN and that this material will soon be transferred to Ipero. Uranium hexafluoride is the raw material used in the centrifuges of the Almirante Alvaro Alberto isotope enrichment unit, which will be dedicated tomorrow. Two old centrifuges models were shown in IPEN. Authorization was not given to take pictures of the more modern machines.

Rear Admiral Othon Luiz Pinheiro da Silva, 49, who is the director of the IPEN Reactor Research Department and who is in charge of the Ipero facilities, said that "by mid-year Brazil will be able to enrich uranium to 20 percent." Enriching uranium means turning it into nuclear fuel. The process consists of increasing the concentration of uranium 235 in relation to the concentration of uranium 238, which is a more common isotope. The enrichment to 20 percent (that is, obtaining a material with 20 percent of uranium 235) transforms the material into a fuel that can be used in a propulsion

reactor for a nuclear submarine, which is the Navy's objective. The Aramar center has already managed to enrich uranium to 5 percent. The Navy also wants to build a 50-megawatt reactor in Ipero to serve as a model for the nuclear submarine reactor. Pinheiro da Silva admitted that hydroelectric energy is cheaper, but he stressed that Brazil must develop its nuclear capacity "to use it whenever necessary."

Pinheiro da Silva added that some $50 million has already been spent in the project since 1982, and that $81 million was spent in 8 years for developing the uranium enrichment technology. Nazareth said that the funds have been provided by the Navy, the National Security Council, and the CNEN.

The rear admiral said that the autonomous nuclear program actually began on 2 February 1980 with only 7 people and "little money." The beginning of the program was planned during 4 months in 1979. The first successful isotope enrichment experience performed with equipment designed in Brazil took place in September 1982. The first "cascade" was achieved 2 years later using 9 ultracentrifuges. The cascade is a graudal uranium enrichment process.

Daily Views Nuclear Counterespionage
PY081437 Sao Paulo FOLHA DE SAO PAULO in Portuguese 7 Apr 88 p A-8

[By Roberto Lopes]

[Text] Brasilia—The SNI (headquartered at the organization's central agency, in the sector of Isolated Areas in southern Brasilia) and the military information services are keeping track of the efforts at least three countries—the United States, the USSR, and Argentina—have made to keep abreast of the progress made by the Navy in the research of the propulsion system of the first Brazilian nuclear submarine (whose construction is scheduled for the beginning of the next century).

Some 3 years ago, when the project—christened "Chalana"—was still being developed at the Institute for Nuclear and Energy Research (IPEN) in Sao Paulo (Sao Paulo University campus), the then Captain of Sea and War Othon Luiz Pinheiro da Silva (today a rear admiral), who was the chief of the project, discovered an information leak. An investigation led Othon to an Army reserve colonel, who was also an IPEN official, who was in contact with a U.S. citizen who passed himself off as a scientist.

The investigation results were submitted in a secret report to the Navy minister, who sent it to the SNI counterespionage service. This is the sector in charge of controlling the activities of all foreigners suspected of espionage in Brazil. Later, the then Commander Othon recieved a report from Brasilia (through the Navy Ministry) informing him that the alleged U.S. scientist had no diplomatic status and that his presence in Brazil would be disposed of through secret government channels (that is, he would be expelled), without the participation of either Itamaraty or the State Department.

At the request of Othon, IPEN dismissed the reserve colonel and, months later, one of his brothers—who was a captain of sea and war—was sent into reserve. Othon's service record then began to be analyzed in order to promote him to the rank of admiral.

At the begining of 1987, the intelligence sector received information about the activities of the political sector of the U.S. Consulate in Sao Paulo, which was keeping track of the work by the Navy Special Project Coordinating Board (COPESP) in the Sao Paulo district of Ipero, where the Aramar experimental center is being installed. The "Chalana" project will gain a decisive new impulse at Aramar.

The information included the persistent pressure of a female diplomat of the U.S. Consulate in Sao Paulo on PT member Oswaldo Nocci, who leads his party bloc at the municipal chamber in Sorocaba (a municipal district near Ipero); on other local politicians who oppose the Aramar research; and on the ecological group of the Ipanema hill, an organization opposed to the work by the Navy.

President Jose Sarney and Navy Minister Admiral Henrique Saboia will take Argentine President Raul Alfonsin to the dedication ceremony of the Admiral Alvaro Alberto uranium enrichment unit in the Aramar center tomorrow morning.

The Soviets

In 1986, the intelligence services detected that the Soviet Embassy in Brasilia was very interested in the so-called Brazilian parallel nuclear program. FOLHA learned that a Soviet journalist residing in Brazil and some Soviet diplomats attempted to obtain information on Brazilian nuclear developments from officials from the Mines and Energy Ministry which specializes in the subject. These efforts by the Soviets were regularly reported to military members of the intelligence services.

This did not reduce the concern of the intelligence services about people who might disagree with the manner in which the government was conducting the parallel nuclear program, and even about the Mines and Energy Ministry technical team, which the military believed to be "jealous" of the strict control that the IPEN-COPESP-CNEN [National Nuclear Energy Commission] axis exercised on the research.

At the end of 1986, after FOLHA reported the construction of unexplained tunnels (which could serve some nuclear purpose) at the Cachimbo military base in southern Para, and after the press widely covered Navy activities in Ipero, the SNI and military intelligence investigated the possibility that the reports might have

originated with the Mines and Energy Ministry team or with new leaks from the colonel who was dismissed from IPEN. The investigation disclosed that some information originated with Sao Paulo PT advisers, who received the information and then passed it on to reporters through anonymous calls, although the information was always provided by the same person.

Argentina

The SNI and the Naval Intelligence Center (CENIMAR) keep a rigorous watch on the activities of the Aramar experimental center. The two organizations have reports that even though Argentina is ahead of Brazil in the nuclear area, Argentine authorities from the nuclear sector have found it difficult to integrate the Argentine industrial sector with nuclear research. This is precisely why Argentina is interested in the Brazilian parallel nuclear program.

The security at Aramar is personally controlled by Admiral Othon, 49, a specialist in boilers who received a naval engineering degree from the Massachusetts Institute of Technology (MIT). Othon's friends call him "the Brazilian Rickover," alluding to U.S. Admiral Hyman Rickover, who is considered "the father of U.S. nuclear submarines." Sao Paulo scientists and physicists believe that Othon is "excessively militarist" in the nuclear development area, because they have been kept outside the Navy research at Aramar. National Council for Scientific and Technological Development (CNPQ) President Clodowaldo Pavan has already been informed about the situation.

At the beginning of 1987, Othon was promoted to rear admiral (two-star admiral) and his COPESP was directly linked to the important general directorate of Navy Materiel (DGMM), which is headed by a 4-star admiral.

BANGLADESH

Government To Install Anantapur Nuclear Plant

BK221312 Dhaka Overseas Service in English 1230 GMT 22 Apr 88

[Text] The Bangladesh Government will take necessary steps to install Anantapur nuclear plant. This was stated by Energy and Mineral Resources Minister, A.B.M. Ghulam Mustafa, while addressing the scientists and officials of Bangladesh Atomic Energy Commission at Sawar near Dhaka yesterday.

He said Bangladesh already entered into the age of atomic power with the commissioning of a nuclear reactor at Sawar Atomic Energy Center last year. The minister inspected the isotones preparation process at the nuclear reactor of the center.

INDIA

Pakistani Nuclear Weapons Program Confirmed

BK075288 Delhi Domestic Service in English 0730 GMT 28 Apr 88

[Text]The Rajya Sabha was informed today that India's apprehensions on Pakistan's nuclear weapon program have been confirmed by all available evidence. The minister of state for external affairs, Mr Natwar Singh, said in a written reply today that the government is aware of reports about Pakistan's efforts to procure disc magnets for use in its weapons-oriented nuclear program. Its clandestine procurement of nuclear technology, materials, and components from a number of countries are also in our knowledge.

AEC Chairman Speaks on Nuclear Power Program

51500143 Bombay THE TIMES OF INDIA in English 21 Mar 88 p 17

[Text] Chandigarh, 20 March. The atomic energy commission chairman, Dr M.R. Srinivasan, has said that nuclear energy would have to be an important component in the overall solution to the energy problem.

"I am not saying nuclear energy is the only solution," he added.

Dr Srinivasan was speaking on India's nuclear power programme at the Central Scientific Instrumentation Organisation (CSIO) here, on Friday.

Having created all-round capability in the nuclear power field, India was in a position to move to the industrialisation phase. The country was now working on a 500-mw fast breeder reactor and its design was in an advanced stage.

The AEC chief said that under the stepped-up-programme "we are seeking clearance for ten more reactors" to push up the nuclear energy component to 10 per cent of the total installed capacity for energy generation by 2000 A.D. The current installed nuclear power capacity in the country is 1,200 mw. The high expectations people had about a massive entry into the energy business in the early days of nuclear power development remained unfulfilled, he said.

Slow Process

A major factor that held up the pace of development was that it took the country a long time to develop key nuclear components. The slow process of manufacturing the designed components and the construction of nuclear plants contributed to the delay. Dr Srinivasan spoke of the efforts being made to minimise the manufacturing time cycle. Regarding heavy water production, he said it involved complex technology and took the country considerable time to master the technology. "We are now much better equipped to organise heavy water production," said the AEC chief.

Referring to the safety factor, the AEC chief observed that 400 nuclear reactors were in operation in world, of which 100 were located in the U.S. Dr Srinivasan said the safety techniques had been reviewed by atomic energy establishments in various parts of the world after the Chernobyl accident which he noted followed gross violation of operating discipline. There was an earlier review in the U.S. following the accident in the Three Mile island in 1979.

On radiation hazards, the AEC chairman noted that people did not realize that life on earth entailed radiation from the sun, the sea, water and some minerals. "We are living in a sea of radiation," he said. A study made in the U.K. some time ago revealed that a person in Britain received 85 per cent radiation exposure from natural sources and nuclear power plants accounted for 0.1 per cent radiation exposure.

Regarding safety standards adopted in India, Dr Srinivasan observed that the Narora nuclear reactor was located in a concrete structure within a covering structure, in accordance with the "double containment" safety design.

Speaking about "misgivings expressed about locating a nuclear plant in an area with seismic history, he said this factor was taken into account at the stage when the unit was being designed. If seismic history ruled out location of a nuclear plant, two-thirds of the country came under the area experiencing seismic disturbances, said the AEC chairman. It was a question of designing nuclear plants allowing for such conditions.

/12913

Explosion Sets Off Fire in Baroda Heavy Water Plant

51500144 Bombay THE TIMES OF INDIA in English 19 Mar 88 p 1

[Text] An explosion at the Baroda heavy water plant of the department of atomic energy set off a major fire in the high-pressure section of the plant around noon today.

There were no casualties but several workers were said to have suffered irritation in the eyes and exhibited other symptoms of being affected by the synthesis gas that leaked from the unit, official sources said.

At least 15 fire tenders, from the heavy water plant, the nearby Gujarat State Fertiliser Company, the Indian Petrochemical Corporation Limited and the Gujarat refinery, as also of the Baroda Municipal Corporation, fought the blaze and brought the flames under control after an hour.

The cause of the explosion, which occurred at 12:35 p.m. was not immediately known. But a preliminary investigation indicated that it happened in the purifier of the high pressure section, official sources said.

The entire plant was shut down immediately and the high pressure section isolated, they said. Since the gas was still leaking, plant personnel could not get to the spot to make any assessment of the damage. It is not known when the plant will be recommissioned.

The Baroda heavy water plant, commissioned in 1975 is the only unit of its kind in the country which uses the ammonia-hydrogen exchange process at the high pressure of 650 atmosphere.

The plants at Thai and Tuticorin use the ammonia-hydrogen exchange process at low pressure, and so also will the plant being set up at Hazira.

Our Staff Reporter Adds From Bombay

A source in the Atomic energy Regulatory Board (AERB), which oversees operations in all indigenous nuclear installations, recalled that a similar mishap had occurred in the Baroda plant 12 years ago.

A pipe in the high-pressure section had burst, but there were no casualties, he said. An investigation into the earlier mishap had revealed that the burst had occurred due to a defective piping material supplied by a foreign collaborator, the source added.

/12913

Funding of Atomic Energy Department Projects

51500146 Madras THE HINDU in English 4 Mar 88 p 11

[Words in boldface as published]

[Text] **Outlay for Atomic Energy Dept.:** The Department of Atomic Energy (DAE) gets an enhanced outlay of Rs. 732.80 crores for 1988-89 as against the Budget estimate of Rs. 671.80 crores and revised estimate of Rs. 696.02 crores for the previous year. The increase has been provided for the capital expenditure on the projects of the Indira Gandhi Centre for Atomic Research (IGCAR), the Bhabha Atomic Research Centre (BARC) and the Tata Institute of Fundamental Research (TIFR).

As much as Rs. 33.52 crores has been allocated for the IGCAR and a major chunk of this is for engineering research for the Fast Breeder Test Reactor (FBTR) and allied facilities. The estimated cost of the Prototype Fast Breeder reactor is Rs. 25 crores.

Kalpakkam project: Under the programmes of the BARC, for which a total funding of Rs. 151.83 has been approved, Rs. 23.57 crores goes towards the continuing project of establishment of the Power Reactor Fuel Reprocessing Plant (PREFRE) at Kalpakkam.

In addition to the Rs. 5 crores allocated under the Department of Science and Technology coordinated programme of research in High Temperature Superconductivity, Rs. 2 crores and Rs. 1 crore have been approved for the BARC and the IGCAR respectively.

TIFR's budget allocation has shot up from Rs. 16.38 crores (revised estimate for 1987-88) to Rs. 23.58 crores. The increase is due to the execution of the various national programmes under this institution, namely the Giant Metre Wave Radio Telescope, expansion of activities of the Homi Bhabha Centre for Science Education and setting up of a Centre for Fundamental Research in Biological Sciences.

Heavy water imports: Heavy water worth Rs. 136.99 crores had been acquired from sources outside the national heavy water production facilities from which the DAE draws its requirements. Against a projected purchase of Rs. 90 crores worth of indigenous heavy water, a revised sum of only Rs. 65 crores had been spent during 1987-88, indicating a shortfall in heavy water production. This has resulted in an import of more than double the amount produced by the five Indian heavy water plants.

An allocation of Rs. 116 crores has been made for the new Hazira heavy water project, one of the three projects currently under execution. For the nuclear power schemes, the addition is not substantial compared to the previous year's revised estimate of Rs. 251 crores. Next year's allocation is Rs. 262.73 crores. This is largely due to the creation of the Nuclear Power Corporation (NPC)

which is expected to raise Rs. 171 crores during the year through public bonds apart from an amount of Rs. 70 crores to be met through internal resources. This is to be compared to the respective earmarked amounts of Rs. 78.42 crores and Rs. 30 crores last year. The NPC was formed only during the middle of the last financial year.

/12913

PAKISTAN

Nuclear Option Defended

51004724 Islamabad THE MUSLIM in English 31 Mar 88 pp 4-5

[Article by Air Chief Marshal (Retd) Zulfiqar Ali Khan: "The Nuclear Option for Pakistan"]

[Text] About 12-13 years ago, Pakistan embarked on a modest nuclear programme. Its nature was mainly experimental and objectives peaceful. But from Day One, it assumed a controversial character. For enemies and detractors, it was a welcome occasion to raise the bogey of the advent of the "Islamic Bomb" and create an atmosphere of terror; naive friends and allies lost no opportunity to place impediments in the progress of the programme and let Pakistan down in the comity of nations by painting it as a "naughty boy".

Nuclear Bogey

The result has been that while a blind eye is turned towards other important world affairs, the bogey of Pakistan's nuclear ambitions is raised in season and out of season. It may be recalled that last year again, a considerable hullabaloo was raised over the issue drawing public attention at home and abroad. The U.S. suspended its military and economic aid to Pakistan for three-and-a-half months ostensibly because Arshad Parvez, a Canadian of Pakistani origin, had reportedly been involved in the alleged export of sheets of special steel for use in Pakistan's nuclear programme. According to the propaganda campaign unleashed in the international media, this went to prove conclusively that Pakistan was in fact vigorously pursuing its objectionable nuclear plans.

Whether the suspension of the U.S. aid, which at one time looked like culminating in a total cut-off (but proved to be an empty threat) was in fact triggered by Pakistan's nuclear programme or there was another immediate cause for this "arm-twisting", whether Arshad Parvez had any links with Pakistan or was at all connected with its nuclear programme, and whether the special metal sheets in question could only be procured from Canada are beside the point. What cannot be denied is that our nuclear programme is now deeply linked with our foreign policy. Also, its success or otherwise or any delay in its fruition will have a long-range impact on our economy. It is, therefore, necessary to undertake a close examination of the various aspects of this programme.

In the context of our nuclear programme, the perceptions of all developed states—whether they are opposed to us, are our rivals or well-wishers—converge. They seem to think that Pakistan's programme will essentially result in greater proliferation of atomic weapons and this will endanger world peace and jeopardise international order. But for a developing country, there is more than one facet of the importance of nuclear technology-economic progress and acquisition of energy being on top of the list; undoubtedly it is invaluable in the context of the country's security also.

No matter how peaceful the purpose of achieving nuclear capability, let us face the fact that its military aspect cannot be ignored. It just cannot be denied that nuclear capability adds considerably to the prestige and international clout of a country, whether it is Israel or India, South Africa or Brazil. For these considerations, most developing nations are striving hard to accomplish success in this field. When there are so many dimensions to the peaceful use of nuclear technology and it has vital links not only with the country's economic well-being, industrial progress, domestic political power but also with international relations and concepts having a bearing on territorial integrity, there is no reason why a country like Pakistan which seeks progress and prosperity should not make every effort to acquire this technology as early as possible.

The sphere in which nuclear technology can operate best for peaceful purposes is of course economic. Oil prices still being sufficiently high, a large quantity of energy can be produced at cheap rates through nuclear power. It, therefore, has a vast potential to provide a badly needed resource to cope with the growing demands of our requirement of energy for domestic and industrial use.

Energy Needs

The present position is that in order to meet its annual requirement of fuel, approximately 23 million tons of oil or similar other resources are needed. Of these, two-thirds are commercial energy resources such as oil, natural gas and steam-coal, while the remaining one-third are non-commercial resources like firewood, charcoal and cow-dung. The point to ponder is that our daily consumption of oil is approximately 2,00,000 [as published] barrel whereas its indigenous production is hardly 50,000 barrels, (25 percent of the consumption), which means that three-fourths of our oil requirement has to be met through imports.

The bills involved, at least during the period 1974-1985, have been prohibitively high and have seriously affected our development plans. Admittedly, oil prices during the last couple of years have registered a downward trend

but who knows how long this favourable climate for oil-importing countries would prevail and the oil prices would not shoot up again. Unfortunately, our endeavours at enhancing domestic oil production have not yet met with such a significant success as to enable us to harbour hopes that we would become self-sufficient in this field in the near future.

As for firewood, whatever wood grows in the country, 60 percent of it is used up as kitchen fuel in our rural areas where 70 percent of Pakistanis live. Small wonder that our forests are fast dwindling, Government's seasonal tree-plantation rituals notwithstanding.

The coal extracted in Pakistan is not of a high quality. It has a large proportion of sulphuric content and is not suitable for industrial use.

The only resource of this kind which we possess in sizeable quantity is natural gas. It provides adequately for at least the domestic requirement of our cities, but the other—and somewhat sad—aspect of it is that instead of putting this invaluable resource to industrial use, we are burning it away in cooking ranges and ovens.

Other Options

On the other hand, the shortage of electricity and the resultant load-shedding is hitting us real hard and our industry has already incurred a loss of up to Rs 30 billion on this account. Now, when we cannot meet most of our energy requirement through conventional means such as indigenously produced oil, hydro-electricity, natural gas, firewood and coal, what choice have we other than to seek alternative methods of acquiring sufficient power. The necessity for making this choice assumes urgency if the fact is highlighted that our power requirement is even on the increase because of our rapid economic growth, particularly in the field of essentially needed industry, and our present per capita rate of power consumption is less than many a country belonging to the low-income bracket such as Egypt.

Contrary to official claims, in food we have not yet been able to achieve autarky. In the recent past, we have had to import atta, and even gram and onions [as published] from a country like India which not very long ago was a food-deficit area. Surely, we must raise our yield per acre and match it with that of our neighbour, build more storage space, check smuggling, etc., etc., but one day we must also turn our attention to the vast unutilised desert that constitutes almost one-fifth of our land. Reclaiming desert for agriculture and other economic uses would require an enormous amount of energy which would be impossible to come by through conventional resources.

Nuclear science has an important direct role in medical and agricultural research. Besides, there are fascinating prospects for all-round technological advancement as a by-product of nuclear research. The engineering experience to be derived from the development of nuclear-powered industry in the form of new engineering and scientific skills is tremendous; many an avenue for improved metallurgy and applied electronics would be thrown open, stimulating diversification of allied industry, manufacturing processes, manpower employment, economic output and development in a variety of sectors.

Nuclear energy also offers developing countries a wonderful opportunity to leap frog over obstacles in the way of economic growth, accelerate the process of overcoming widespread illiteracy, poverty and poor health, and generally rid themselves of the adverse conditions which have earned them the label; "underdeveloped". Detractors of our nuclear programme, particularly those who wish us well, should take due cognisance of this vital factor.

In analysing the military uses of nuclear power, it is important to remember the historical fact that the countries possessing nuclear weapons, who actually used them or threatened to use them, did so only against those countries which lacked this capability. The USA used it against Japan which could not pay the U.S. back in the same coin. The U.S. threatened its use in the Korean and Vietnam Wars against adversaries which did not possess similar weapons. The Soviet Union wanted to destroy China's embryonic nuclear facilities at Lop Nor just as our Kahuta installations are presently threatened by India and Israel. The latter earlier demolished the Iraqi nuclear plants.

Security Threat

No member of the so-called nuclear club has yet taken on or even flexed its nuclear muscle in the face of another member of the club despite all academic discussions regarding the ability to ride out the first attack and the issues arising from it. Also no non-nuclear country in its right mind has dared to carry out what would e a suicidal attack against a nuclear power. Thus, it is not difficult to reach the conclusion that nuclear capability acts as a viable deterrent for military adventurists and it has worked well as such for the last 40 years.

Even since Pakistan's birth, the constant and most potent threat to its security has come from India. Apart from its political and economic onslaughts, India has forced war on Pakistan on four occasions. In 1948, it forcibly occupied the major part of the Muslim-majority State of Jammu and Kashmir which, according to the principle of the division of the Indo-Pakistan subcontinent, should have gone to Pakistan. Of course, India also conquered the Hindu-majority States of Junagadh, Mangrol and Manavadar, whose Muslim rulers had made the mistake of acceding to Pakistan which did not move physically to defend its territory as India had done in Kashmir. Even Hyderabad Deccan was subjected to

India's Police Action because its Muslim ruler had opted to join neither India nor Pakistan in exercising of a right conferred on the princely states by India Independence Act, 1947.

In 1971, India dismembered Pakistan by invading its eastern wing. In 1986, India's extensive and intensive operational exercise "Brass Tacks" had germs of war and India was, in fact, poised to deal a final blow of annihilation to the detested thorn in its side. The calling off of the adventure—whether due to India finally getting cold feet or failing to elicit the kind of support from its friends as Indira Gandhi was able to muster in pre-'71 war period, or our "cricket diplomacy" scoring a real sixer—was moaned by many a powerful voice in India as the "war that never was" which presented a rare opportunity to India to restore the sub-continent's historical and geographical unity" or at least fulfill its ambition of regional supremacy.

Every year that goes by, sees the gap between India and Pakistan's conventional forces increasing further and further. India's armed forces now rank the largest in the world after those of the two superpowers. They have also been reequipped with all manner of advanced and sophisticated weapons, the latest being surface-to-surface missiles which could be launched from the Indian soil and hit important targets in Pakistan.

India exploded a nuclear device in 1974 and has only recently added a nuclear-powered submarine to its fleet, thus not only acquiring tremendous maritime power but also making nonsense of the UN efforts to de-nuclearise the Indian Ocean. In this awesome scenario, what indeed is the choice for Pakistan? To constantly chase India in the conventional field with never any hope of even reducing the gap because of the resource and other constraints and anyway cripple itself economically in the process, and yet remain in perpetual fear of a nuclear attack from India.

Despite its protestations as to its peaceful intentions, India's track record on the use of force or its blatant display has been impressive. Kashmir, East Pakistan, Hyderabad, Dacca, Junagadh, Mangrol, Manavadar, Goa, Sikkim, Sri Lanka—the list is really long, even for a big country barely in its 41st year as an independent nation.

It is not my intention to whip up war-hysteria, but let there be no mistake about it: the day India is reasonably confident of a cheap victory against Pakistan, it would neither think twice about seizing the opportunity, nor have any qualms of conscience about it. So, has Pakistan any reasonable choice for its very survival other than to achieve the so-called balance of terror. It is time for us to cease being apologetic about it and adopt necessary measures to acquire this necessary deterrent. For us, this appears to be the only feasible insurance and the sooner we obtained the cover, no matter how high the premium, the better for us.

A word about the delivery system. Doubts are on occasions expressed in this regard. It is observed that even if we achieved nuclear capability, the lack of an efficient delivery system would pose a serious problem. Undoubtedly, the sophistication of delivery system adds greater credibility to nuclear weapons, but it is well known that most fighter aircraft are capable of carrying nuclear weapons, if fitted with suitable racks for the purpose and can deliver the armament with reasonable efficacy.

India will of course kick up a lot of dust if Pakistan declared that it planned to acquire nuclear-weapon capability as indeed it has always done even when Pakistan has undertaken modest plans to modernise its antiquated equipment. It would continue to do so and we should learn to live with this unpleasant fact. However, the attitude of the United States in this context is somewhat baffling. Being fully aware of the Indian capability in this field and its persistent refusal to sign the Non-Proliferation Treaty the U.S. has been insisting in what cannot but be seen as a highly discriminatory manner that Pakistan should sign such a treaty unilaterally and throw open its nuclear facilities for international inspection.

Time and again, the U.S. has to put the heat on Pakistan over this issue, the cancellation of the deal to sell A-7 aircraft to Pakistan in 1970s being a classic example and the temporary suspension of even economic aid to Pakistan being the latest.

It is high time that our "friends and allies" appreciated our concerns both economic and security in their proper perspective. Preconceived philosophical notions must be shed and it ought to be recognised that Pakistan's economic well-being, so essential to save the teeming millions from falling prey to economic depression and ever-increasing insecurity depended on geometric progression of its energy resources which could only be accomplished through nuclear power. Also, Pakistan's acquisition of weapon-grade nuclear energy would effectively put an end to the mad expensive arms race in the subcontinent as well as ensure its territorial integrity against the possible hegemonic designs of a much more powerful neighbour which already possesses nuclear capability.

/06662

IRELAND

Nationwide Network of Nuclear Alerts Planned

51500142 Dublin IRISH INDEPENDENT in English 29 Feb 88 p 10

[Article by Tony O'Brien: "Nationwide Network of Nuke Alerts are Planned"]

[Text] A network of special detectors spread around the country will give Ireland early warning of a nuclear accident in another country.

The detectors will be located principally along the east coast in Dundalk, Dublin and Rosslare with others in the Midlands and probably in the West.

The early warning system is provided for in the National Emergency Plan which Energy Minister, Mr. Ray Burke, said yesterday he hopes to have through the Cabinet in about the next six weeks.

These continuously operating radiation monitors would detect any radioactivity reaching Ireland and would give a first warning to the authorities here if international notification arrangements broke down.

Details of how the National Emergency Plan will work were given at the weekend by Dr. John Cunningham, Assistant Chief Executive of the Nuclear Energy Board to a conference in Wexford on nuclear power.

Organised by Wexford Corporation and the Institute of Public Administration, the conference on nuclear reactors and the Irish Sea attracted nearly 250 local councillors and environmentalists from all over Ireland, the North and from Britain.

British Nuclear Fuels, who operate the controversial Sellafield plant, also sent a representative to explain their position to an Irish audience.

Dr. Cunningham said the first notification point would be at Garda HQ with an emergency control centre being established if the situation was serious enough.

There would be intensive monitoring of foodstuffs, including milk, fish, animals and vegetables, for radioactive contamination with restrictions being imposed if necessary.

Admitting that we were unprepared to cope with the Chernobyl aftermath, Dr. Cunningham said it was vital that no matter what nuclear safety measures were taken abroad or how small the risk of an accident "we must be prepared in this country".

The Minister, Mr. Ray Burke, said he hoped to have the emergency plan, which was drawn up months ago, approved by Government within the next six weeks. He added that the new National Radiological Protection Board, which is replacing the NEB, will play a major role in the plan.

Mr. Alan Scriven, head of British Nuclear Fuels environment protection unit, said they had nothing to hide at Sellafield and he invited Irish politicians to visit the plant and "see what is happening yourselves."

Earlier at the conference, Mr. Burke was called on to direct the ESB to withdraw its planning application to build a nuclear power station at Carnsore Point in Co. Wexford.

Although successive governments have been anti-nuclear and the ESB has said it has dropped its nuclear project, the planning application is still on file and has never been formally withdrawn.

/12223

Statistics on Post-Chernobyl Radiation Told

51500141 Dublin IRISH INDEPENDENT in English 9 Mar 88 p 1

[Article by William Dillon: "Sheep Radiation: One in Eight Above Safety Limit"]

[Text] One in eight sheep tested for radiation in a major post-Chernobyl monitoring programme were found to be above the 600 becquerels EEC safety limit, according to a Nuclear Energy Board report.

But radioactivity levels had dropped dramatically by the time the animals were presented for slaughtering to be sold as meat across the butcher's counter.

The wide-ranging survey of farms in eight counties found that two per cent of the 7,429 sheep monitored had radiation levels in excess of the 1,000 becquerels per kilo "action level" recommended by the NEB.

The board stressed last night, however, that the results of their testing programme, covering a three-month period from October to December 1987, showed that consumption of lamb did not present a health hazard.

The highest radiation levels were found in sheep in the Ox and Iron mountain ranges of Counties Mayo, Sligo and Leitrim, the Knockmealdown and Comeragh mountains in Co. Waterford and around the Glendowan mountains in central Donegal.

The board said the monitoring of a further 9,625 sheep at slaughter-houses since the period of the report showed that 97.5 per cent were below 100 becquerels per kilo.

Two animals were measured at 650 becquerels and these had not been slaughtered. There was no evidence that lamb with high radiocaesium levels was passing directly in to the food chain.

During the three-month programme, 7,429 sheep were monitored on 636 farms in Counties Donegal, Sligo, Mayo, Soscommon, Leitrim, Galway, Kilkenny and Waterford. Of these, 989 animals showed caesium levels above the 600 becquerels limit set down by EE Countries for the importation of sheep meat.

The high readings were almost all found in animals from mountainous areas with peaty poor-quality soil.

The board pointed out that mountain [as published] for between four and 12 weeks prior to sheep are normally moved to lowland grazing slaughter. When their usual diet of heather was replaced by grass, radiation levels were quickly reduced—going down by a factor of two every 10 to 12 days.

Monitoring of 779 animals in five large slaughter-houses, serving the home and export markets, over three-weeks in November 1987 showed that 71 per cent had levels below "the minimum detection limit" of 430 becquerels per kilo, the report said.

A further 27.5 per cent measured between 430 and 600 becquerels, while 1.5 per cent—nine animals—were over 600. Eight of these were at a slaughtering plant at Ballyhaunis, Co. Mayo, while the other one was at a plant in Camolin, Co. Wexford.

The report said the highest reading at a slaughter-house was 813 becquerels, in a sheep from a farm near Bonniconlon, Co. Mayo, an area previously identified as having sheep with radiocaesium levels of over 1,000 becquerels.

The board warned that in some cases animals for export did not undergo the normal finishing process on pasture, and the identification of the 813 becquerels animal at the Ballyhaunis slaughter-house was "a reminder of the need for vigilance".

/12223

SWEDEN

Newspaper Examines Government Plans for Nuclear Rundown

51002444 Stockholm DAGENS NYHETER in Swedish 3 Mar 88 p 2

[DAGENS NYHETER Editorial: "An Irreversible Decision"]

[Text] Last Wednesday, the Social Democrats honored their commitment to the elimination of nuclear power. Two points in time had been mentioned: the closing of a first reactor during 1993-95 and a second one during 1994-96. It is now proposed that a reactor in Ringhals and one in Barseback are to be closed in 1995 and 1996 respectively. The decision on which one will be the first will be made in 1990. Several other "fine tunings" will be made up until 1995.

On the whole, this information was already official. The press conference last Wednesday with the prime minister and four other ministers did not yield much further information. Economizing, analyses, an energy technology fund, tightened ecological requirements for emission of acidifying elements (but wouldn't that have happened anyway?).

The judgments made on the part of the government, when it comes to replacing two reactors, confirm that there is already a great amount of underutilized reserve power. The loss of two reactors means 8-10 terawatt hours (TWh). The technological possibilities for replacement are estimated to be as much as between 45 and 78 TWh per year by 1997 (the latter case means all of the nuclear power). This extremely high figure is corrected in Birgitta Dahl's proposition to a more guarded "real" potential of 18-31 TWh. Between 5 and 10 TWh of this is estimated to come from reduced use of electricity.

The picture actually looks so favorable that a large possible reserve, i.e., natural gas, has almost been overlooked. The provision of gas could take care of 15-20 TWh of the Swedish energy requirements. As early as 1995, fully developed gas systems could be functioning, provided there could be negotiated guarantees that Norwegian gas fields, for instance, would be developed by 1990. At the present time the gas is acknowledged, but it is pointed [illegible] it it is an interesting alternative only if the price is competitive. Competition seems to be different in other parts of Western Europe. There 15 percent of the energy is derived from natural gas—in Sweden 2 percent. However, the Western European prices for electricity are at a more realistic level.

The most interesting part, however, is the fact that the reserves would allow the closing of not only two but several of the nuclear power reactors as soon as the 1990's. Why does the government not draw this conclusion?

Birgitta Dahl declares proudly that this is "telling it like it is." The day before, the old "line 2" advocate, the Liberal Party, had stated that it had a "definite schedule" for the closings. It has already been interpreted as the end of the cooperation in the nuclear power question.

The Liberal Party sticks to the schedule of "closing-down by 2010 at the latest" but does not want to specify when and how it will be done. The party wants to introduce a bill prohibiting nuclear power after that year. The government is also preparing legislation relating to recall of operating permits and the discussion of compensation to the power companies. (That question may open a can of

worms. Where do you set the limit for compensation demands if politically made decisions are carried out?) Both the Liberal Party and the Social Democrats also want to place a value-added tax on energy. However, that is where the similarities end.

The Social Democrats want to define exactly which reactors will be closed and when, while the Liberal Party wants "market activity" to be the deciding factor. Since the Liberal Party is aware of the impending risk that nuclear power will be maintained until the last possible date and that a shock will follow the rise in the cost of electricity when a number of brand new plants are started-up at the same time, the party wants to direct the price of electricity. That will be accomplished either by adding tax or by allowing the power companies to escrow funds for future investments.

While the government talks about going along with the cost development, the Liberal Party wants to influence it directly. Normally, supply and demand decide market prices. If the supply of electricity decreases while the demand remains unchanged, the price will automatically go up. Those points of view are somewhat unusual for a social-democratic and a non-socialist party.

The Liberal Party's proposal carries the risk that the tax becomes an asset in the government coffers which it might be difficult to give up. There is still no guarantee of an easy transition. Market activities are not always easy to deal with.

Line 2 has become two lines. The Liberal Party placed itself in the middle of the non-socialist camp, between the Center and the Conservatives. It is possible that that description of reality is correct—for half the reality. However, in the political field it is rather the Social Democrats that can now be found in the middle.

Still if there seems to be an unnecessary amount of analysis and an unnecessary lack of action, the end will probably be that the government, with the help of the Center Party and the Left-Wing Communist Party, will carry the first closing measures.

Twenty-five years ago we had no nuclear power. In 25 years we will have no nuclear power. Only a number of encapsulated, perhaps strictly guarded, monuments to a risk management that was managed pretty poorly.

12339

UNITED KINGDOM

UK, USSR To Exchange Information on Nuclear Plant Safety

51500147 London THE DAILY TELEGRAPH in English 31 Mar 88 p 9

[Article by Paul Stokes: "Russians Sign Deal on Atom Safety"]

[Text] The spirit of glasnost will be extended today when a four-man Russian delegation signs a protocol agreement with Britain over the exchange of information on safety in nuclear power stations.

They have spent the last three days on a fact-finding trip to Britain at the invitation of the Government's Nuclear Installations Inspectorate.

It is being regarded as a renewal of contact between the two countries following the Chernobyl disaster two years ago.

Yesterday the Russians toured Hinkley Point, near Bridgewater, Somerset, a working station and proposed site for Britain's second pressurised water reactor.

Afterwards Mr Vadim Malyshev, chairman of the Soviet State Committee for Supervision of Nuclear Safety, said: "Due to the wider development of nuclear power throughout the world, we cannot talk about safety in one country or one station.

"What is more important is joint or collective working which used positive and negative experiences from different countries.

"Over the last year many links have been established throughout the world. In all those links there is only one positive ideological point of view which is that nuclear power has a right to exist when it ensures the safety of the public, personnel and gives complete protection."

The Russians held talks with Mr Parkinson, the Energy Secretary, MPs from all parties and Lord Marshall, chairman of the Central Electricity Generating Board.

They will conclude this morning at a meeting with Mr Eddy Ryder, Chief Inspector of Nuclear Installations, when the agreement is to be signed.

It is designed to encourage both countries to arrange bilateral meetings and exchange reports on accidents in nuclear plants.

Mr Malyshev, who was involved in emergency operations at Chernobyl after the melt-down said: "Our work in Britain will be completed when we sign the agreement."

Meanwhile, the CEGB is preparing for a public inquiry in October into its proposed £1,500 million pressurised water reactor at Hinkley Point following 12,000 objections.

Somerset county council is leading a consortium of 17 local authorities which has pledged £1 million to fight the plans.

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Problem Seen in Disposal of Nuclear Submarines
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[Article: "Nuclear Submarines Set Problem for Ministry"]

[Text] The Defence Ministry does not know how to dispose of the Royal Navy's fleet of nuclear submarines when the time comes for them to be paid off, it was disclosed yesterday.

Senior Ministry officials said they had to deadline for reaching a decision on how and when to dispose of them.

Members of the Commons Defence Select Committee, which met yesterday, are to ask the Ministry for further details.

Britain's first nuclear-powered submarine Dreadnought is already berthed at the Royal Naval dockyard, Rosyth, having had its nuclear reactor removed.

And it is expected that, by the year 2000, two, three or four other nuclear submarines will be waiting to be decommissioned along with some of the four Polaris vessels, which will gradually be replaced by Trident.

Mr John Peters, assistant under-secretary (Material) for the Navy, admitted it would be a "sizeable" problem, which Britain shared with other submarine-operating nations.

Despite constant questioning by Mr Michael Mates, the committee chairman, Ministry officials were unable to say when plans for decommissioning would be completed.

Mr Dick Douglas, MP for Dunfermline West, said Dreadnought was taking up valuable dockyard space.

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Delay in Building of Trident Nuclear Warhead Factory
51500149 London THE DAILY TELEGRAPH in English 31 Mar 88 p 9

[Article: "Warhead Factory Delay Adds £10m To Cost of Trident"]

[Text] Serious delays in the construction of a nuclear complex for the production of Trident warheads were admitted yesterday.

Ministry of Defence officials said the A90 complex at the Atomic Weapons Establishment at Aldermaston, Berks—originally scheduled for service this year—would not now start production until the end of 1992.

To supply warheads for the first Trident submarine, due in service in 1994, much greater use has to be made of an existing plant from the Polaris era, the Commons Defence Select Committee was told.

Much less efficient than the purpose-built A90, it will add up to £10 million to the warhead programme's cost.

Mr John Peters, Navy Assistant Under-Secretary (Material), said the Ministry was satisfied that the in-service dates for Trident would be achieved.

There was no intention of cutting the number of warheads or reducing "any part of the capability," he said.

However, it is believed that any further problems with A90 will make some delays in bringing Trident into service inevitable.

Mr John Mabberley, deputy Controller (Nuclear), said: "It is undeniable that the facility is necessary if we are to meet our requirements for the Trident programme in full."

Mr Dick Douglas, Labour MP for Dunfermline West, said he understood a decision would be taken in June on whether one of the Polaris submarines, probably Resolution, would undergo a fourth refit in case there were delays with the Trident submarines.

Mr Peters said this would purely a "contingency."

If there were a refit it would be much smaller than previous ones.

Construction of A90 is now substantially complete, and essential processing equipment is being installed.

Tests will begin in 1991 with production quality material being put through the facility.

Mr Mabberley said: "It is anticipated production output from the building will begin by the end of 1992."

A "management agent" is to be appointed to co-ordinate the various strands of the programme, whose complexities Mr Mabberley admitted the Ministry had underestimated.

"We are confident that by organisation of these resources in this way and careful planning of the programme we shall indeed meet the required dates for production," he said.

Special steps are also to be taken to boost rates of pay for specialist scientists and engineers because of recruitment problems.

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Not all Chernobyl 'Hotspots' Identified

51500151 London THE DAILY TELEGRAPH in English 28 Mar 88 p 8

[Article by Nicholas Farrell: "Aerial Atom Testing Sought To Pick Up Chernobyl Hotspots"]

[Text] The government is being urged to fund a new method of measuring radioactive contamination after claims that it has identified the highest levels of fallout from Chernobyl yet found in Britain and readings far higher than official published figures.

Known as aerial monitoring, the technique could do "in seconds" what the Government, using ground based methods, takes "months" to accomplish, say the scientists behind the project.

They say that "hundreds of hotspots" are still undetected because the existing methods of monitoring radiation levels have failed to pick them up.

In recent tests they claim to have pinpointed one such hotspot in the Isle of Whithorn, south-west Scotland, where Government restrictions on the sale and slaughter of livestock have been lifted.

Prof Murdo Baxter and Dr David Sanderson, of the Scottish Universities Research and Reactor Centre in East Kilbride, met officials from the Scottish Office at the weekend to put their request for £500,000 to fund research.

The meeting followed a BBC Scotland television documentary which revealed details of their findings.

A Scottish Office spokesman said officials would now report back to Ministers with the scientists' proposals.

Details of the alleged hotspots were being studied, added the spokesman.

"There is no danger to public health. Restrictions on sale and slaughter of sheep in the Isle of Whithorn area were lifted when the levels fell to an acceptable level and we constantly monitor products and produce coming into the food chain."

Aerial monitoring techniques have been developed in several countries, but not Britain.

Detection equipment in an aircraft picks out gamma rays emitted from contaminated areas on the ground. It can measure wide areas very quickly unlike ground-based methods which rely on taking individual soil samples.

A previous request to the Environment Department for funds last March never received a definite response.

Dr Sanderson said: "I am disappointed that we put our ideas on paper more than a year ago and we have had to show through television that the thing can be done in order to reawaken interest."

Tests on four different areas in Scotland were conducted on two separate days this year using a prototype aerial detector. In the Isle of Whithorn, levels of 34,800 becquerels per square metre were found and in areas in Galloway readings of more than 26,000 bq were made.

The level of contamination at which the Government would consider evacuation is 180 million becquerels per square metre, said a Scottish Office spokesman.

But said Dr Sanderson: "Those are the sort of levels you would get in a nuclear war zone. To use those figures when you are trying to assess long term impact of Chernobyl on the environment is frankly a red herring."

Dr David Clark, Labour's agriculture spokesman is to urge a review of monitoring methods.

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